

Double-Column Machining Center

MCR-A5CII

[5-Face Machining]



Double-Column Machining Center
MCR-ASCII
[5-Face Machining]



Hugely expanded range
for powerful 5-face machining

**A space-saving, high-performance
machine for large parts of all kinds**

- Machine design that is easy on operators
- Increased productivity with high-speed machining



Photographs used in this brochure may show optional equipment.
In the above image, most of the enclosure shielding have been removed
to reveal the interior.

Highly efficient machining of large parts

Improved productivity with higher machining capacity

Rapid traverse

- X axis: 30 m/min [1.5 times faster]
- Y axis: 32 m/min [1.5 times faster]
- Z axis: 20 m/min [2 times faster]
- W axis: 3 m/min [3 times faster]

Figures may vary depending on kit specs and machine size.

High accuracy and dimensional stability

- Thermo-Friendly Concept structure
- Z axis: High level of straightness and smooth movements with double ball-screw drive system
- W axis: NC control
- Hyper-Surface (High Speed Contouring)
High speed, high-accuracy machining of 3-dimensional sculptured surfaces (Optional)

Spindles and attachment heads to handle a huge variety of workpieces

Handles wide area machining with 4-station AAC

- 4-station auto attachment changer (AAC), optionally available for compact auto loading/unloading attachments

Highly rigid ram-type spindlehead

- Ram size 350 x 350 mm
- Spindle taper 7/24 taper No. 50
- Spindle speed 4,000 min⁻¹
- X-axis motor 26/22 kW
- Z-axis travel 800 mm (150 mm longer than the previous model)

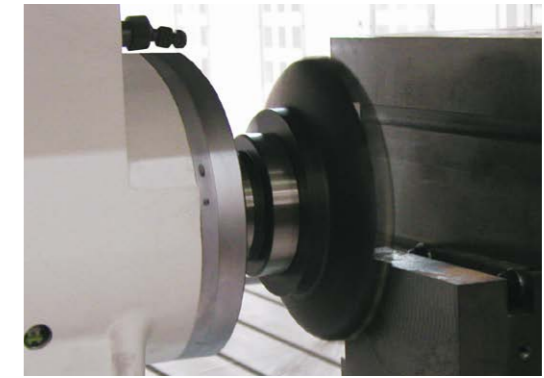
Machining capacity (steel S50C)

Extension head (spindle bore dia. ø100 L150)
710 cm³/min



- ø160 face mill 8-blade
- Cutting speed 221 m/min
- Cutting depth x width 5 x 112 mm
- Feedrate 1,267 mm/min (0.36 mm/blade)
- Z-axis extension 800 mm

90° angular head (spindle bore dia. ø100 L150)
600 cm³/min

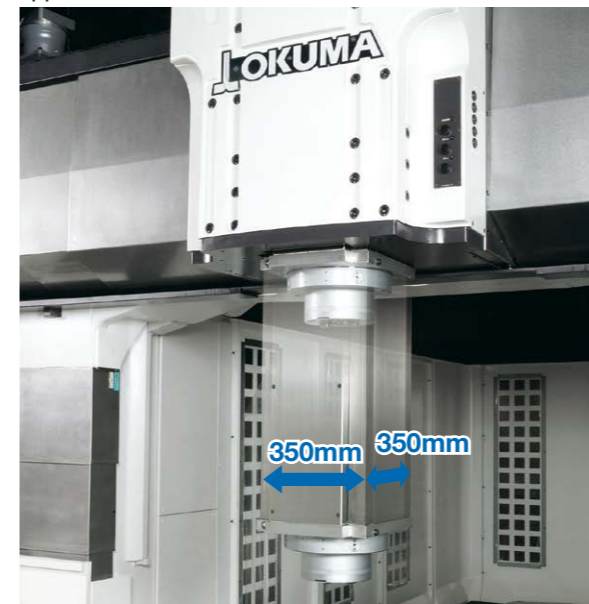


- ø160 face mill 8-blade
- Cutting speed 221 m/min
- Cutting depth x width 5 x 112 mm
- Feedrate 1,071 mm/min (0.30 mm/blade)
- Z-axis extension 800 mm

Note: The "actual data" referred to above for this brochure represent examples, and may not be obtained due to differences in specifications, tooling, cutting, and other conditions.

A ram-type spindlehead for super rigidity

The spindlehead is designed with a large 350-mm square ram, to provide the solid rigidity required for horizontal-spindle applications.

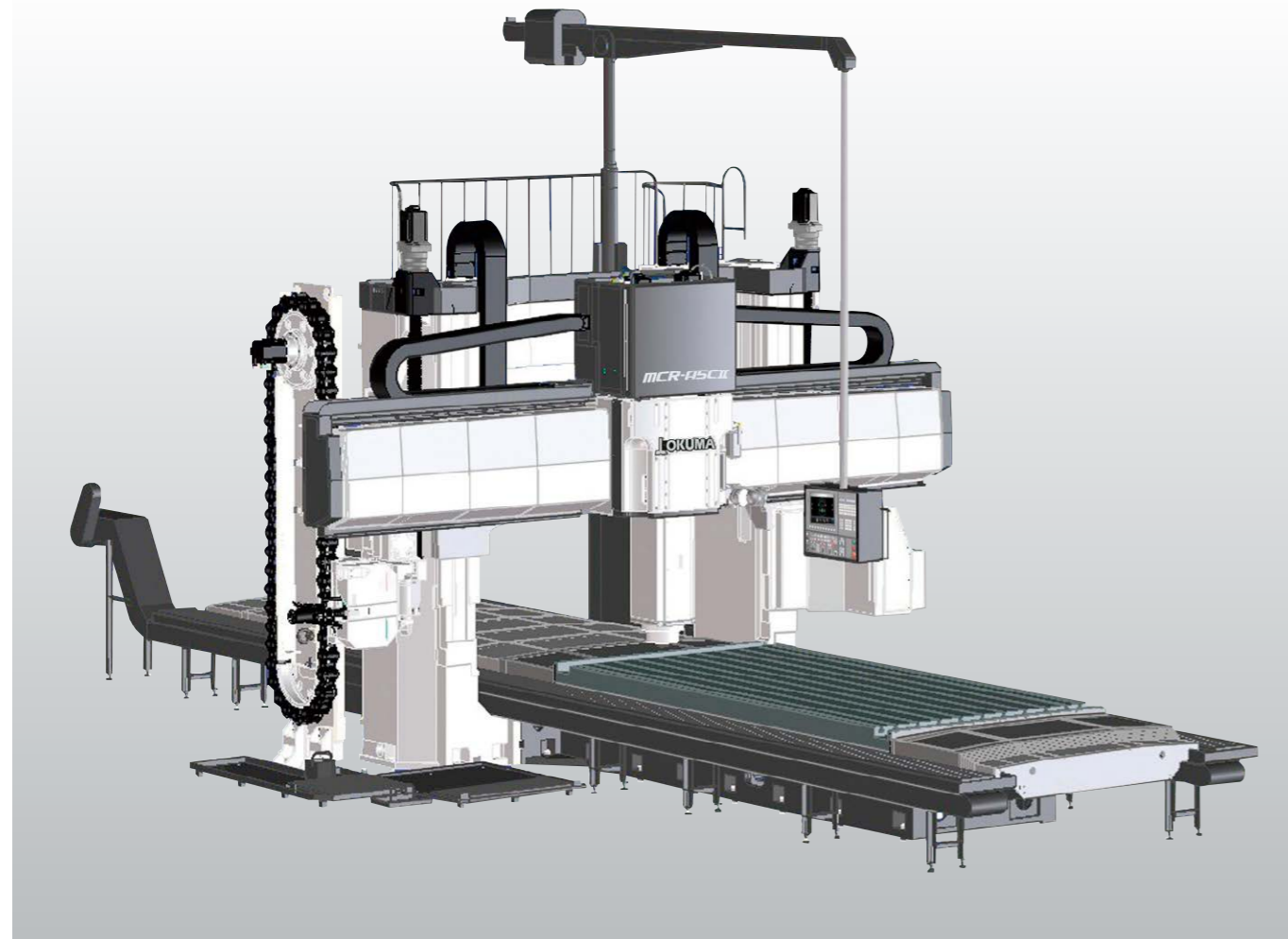
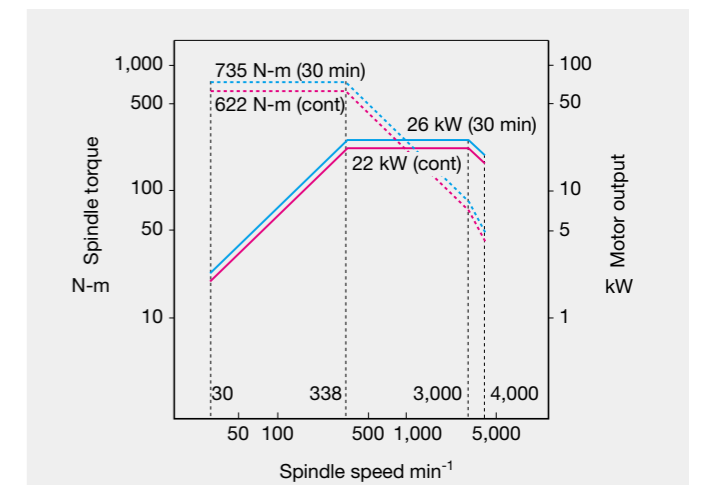


Highly rigid ram-type spindlehead

- Ram size 350 x 350 mm
- Spindle taper 7/24 taper No. 50

Standard main spindle

- Spindle 4,000 min⁻¹ (26/22 kW, 735 N-m)



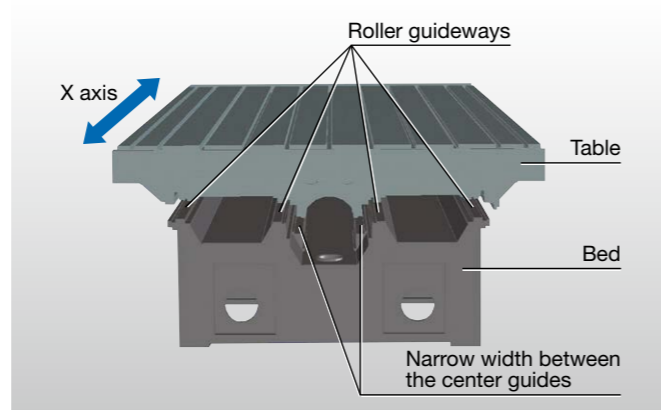
Accurate, rigid, and reliable machine structure that exceeds expectations

Highly rigid and accurate guide system

Bed and table remain completely steady even with heavy workpieces

(X axis: table front/back)

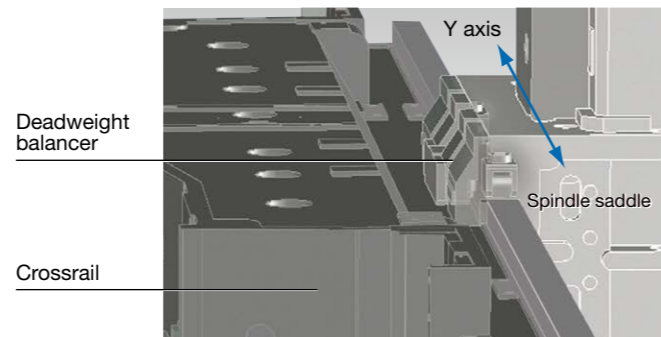
The table has a roller guide system. The weight of the table and workpiece is supported by four rows of roller bearings to enable smooth and light movement and accurate positioning. Featured in the table support layout are the center guideways with a narrow width between them, to achieve outstanding linear motion straightness and long-term stability.



Crossrail firmly absorbs cutting vibrations

(Y axis: spindle saddle left/right)

The spindlehead guide has a wide, highly rigid rectangular cross section. Highly accurate straightness and excellent damping performance is achieved with finish-ground slideways. The spindlehead weight and forward moment are supported by a deadweight balancer via crossrail rollers. This ensures high speed and accuracy for superior quality machined surfaces.



Spindlehead enables powerful cutting over entire travel range

(Z axis: spindle ram vertical)

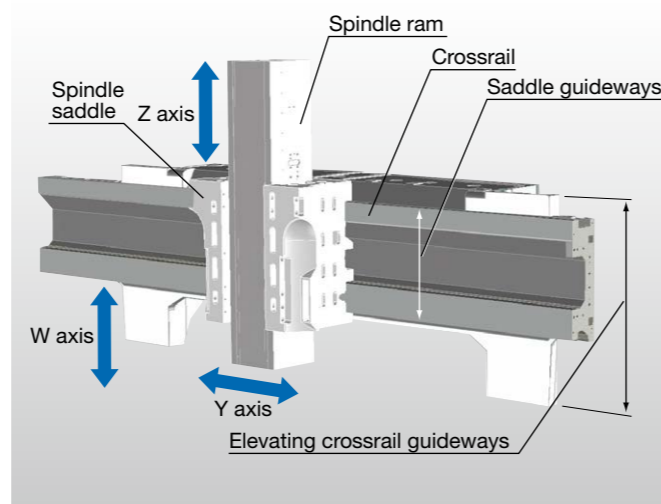
350 × 350-mm square ram is guided on 4 corners with box slideways, enabling powerful cutting along the entire Z axis travel with effective vibration damping, large cross section, and long guideway length.

Z-axis straightness is improved with a double ball-screw drive system that has ball screws on the left and right sides of the ram, achieving less following error, smooth vertical movement with good balance, and accurate positioning.

Crossrail positioning with CNC control

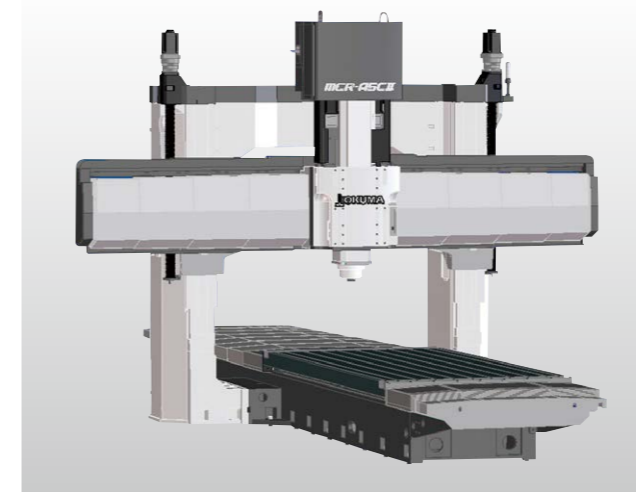
(W axis: crossrail vertical)

Synchronization with Z axis is also possible with CNC control. When machining, solid clamping will support highly rigid and accurate cutting conditions.



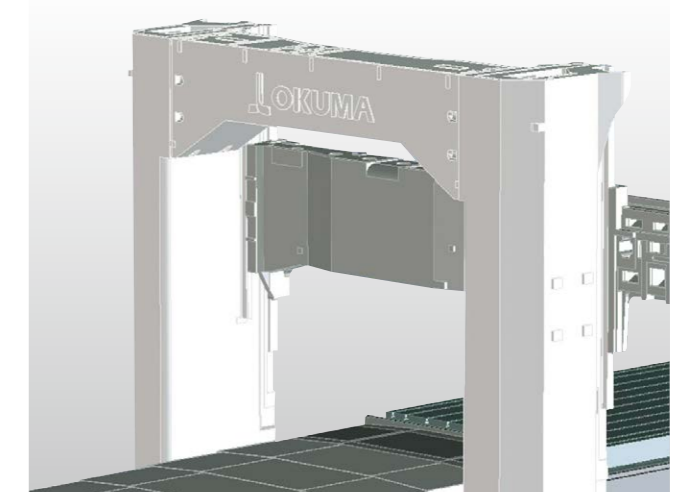
Square double-column construction

The bridged double-column structure with square, prismatic design has great rigidity to withstand axial, lateral, and torsional loads from heavy-duty cutting—and provide superb accuracies.



Powerful cross beam used

Simple designing is achieved with a powerful structure that combines top beam and cross beam in a single piece. Stable quality is achieved over the long term.



Operator-friendly machine reduces stress

Complete handling of chips and coolant with full enclosure shielding (Optional)

Improved chip discharge

In-machine chip discharge uses a full length gutter (Standard). An optional chip conveyor uses a larger size for easy chip cleaning and is useful for large volumes of steel or aluminum chips.

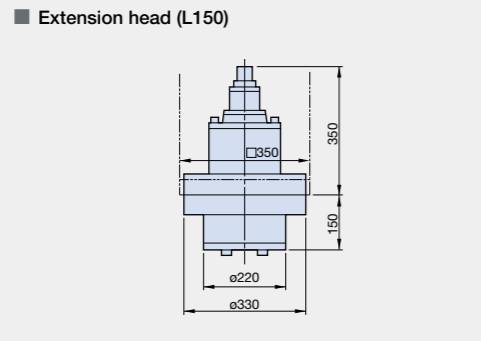


Space-saving, fully automatic and fast, multi-face machining

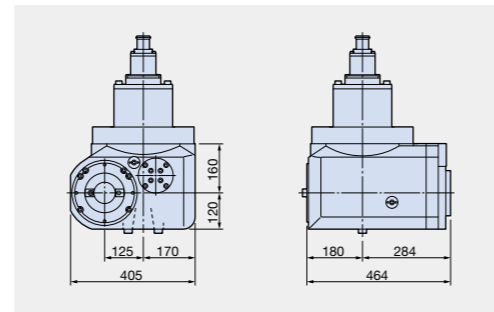
Full array of attachment heads

All kinds of shapes can be machined under the best conditions with the wide variety of attachment heads. Many different processes can be performed continuously in auto operation with the auto tool changer (ATC) and auto attachment changer (AAC), greatly increasing productivity. The abundant variation of attachment heads can be shared with the MCR-BIII.

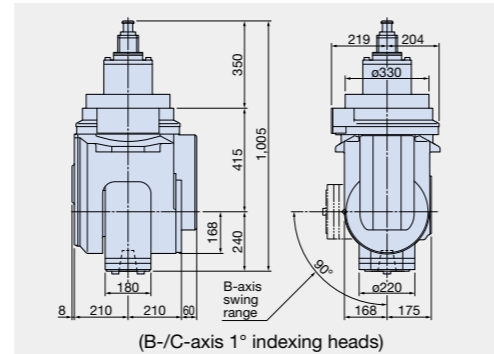
Powerful machining on upper and side surfaces: 5C Kits Extension head and 90° angular head



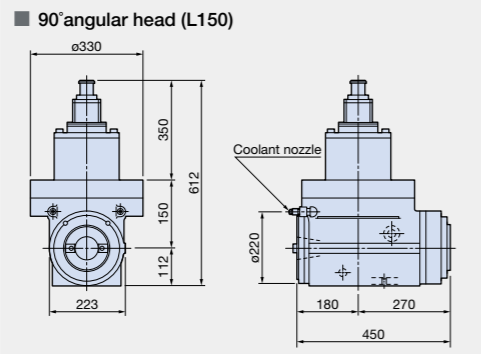
Head change unnecessary with upper and side machining: M Kit Vertical/horizontal swivel head



Slope and multi-sided machining: BC Kit Universal index head (B-/C-axis)



Unit: mm



Fast NC-ATC

Magazine tools can be changed on the attachment heads in the shortest time with swivel-type ready station. Tools can also be moved from magazine to ready station during machining operation.

Automatic tool changing is possible with the following attachment heads:

- Extension head
- 90° angular head
- Vertical/horizontal swivel head
- B-/C-axis universal index head

● ATC times (actual times; 25 × 40 machine)

- T-T: 6 sec
- C-C: 25 sec (Extension head)
- 27 sec (90° angular head)



Extension head change (ready station 0°)



90° angular head change (ready station 90°)



Next tool readied during machining operation

Space-saving AAC (auto attachment changer)

Multi-sided machining is fully automated with various types of auto attaching, ATC enabled attachment heads. Extension and 90° angular heads can be automatically changed by AAC mounted to right column sleeve.

- AAC time: 36 sec (actual time; 25 × 40 machine)



With AAC cover closed



With AAC cover opened

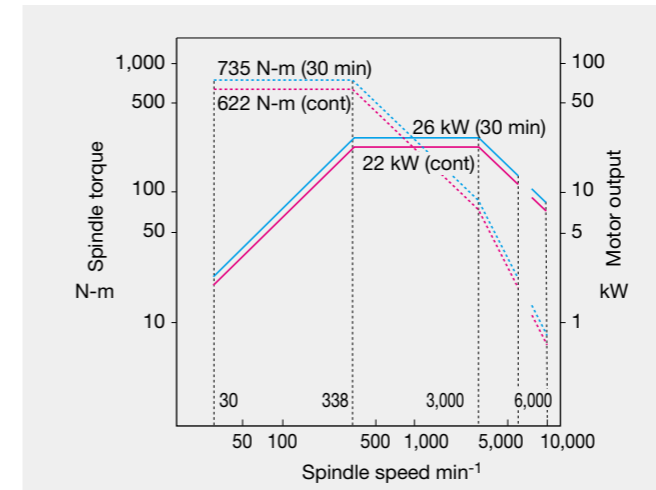


90° angular head and station

Various spindle speeds and attachment heads

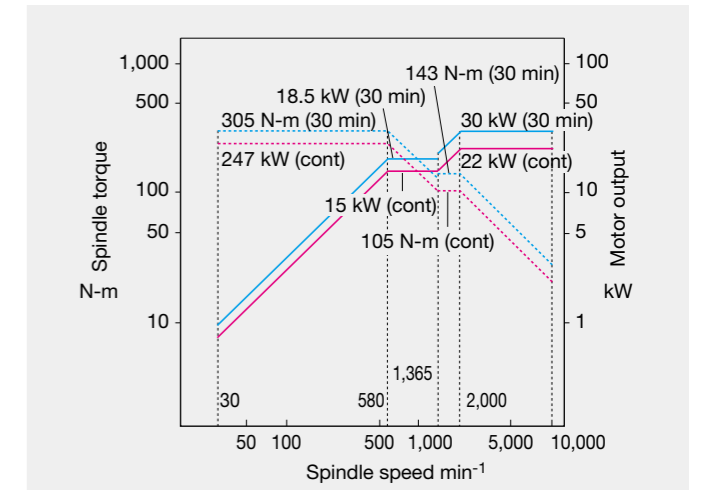
Optional spindle speeds

- 6,000 min⁻¹ (26/22 kW, 735 N-m)
- 10,000 min⁻¹ (26/22 kW, 735 N-m)



Optional spindle speed (high-speed aluminum and other applications)

- 10,000 min⁻¹ (30/22 kW, 305 N-m)



Extension head

- L150: 4,000, 6,000 min⁻¹
- L250: 4,000, 6,000, 10,000 min⁻¹
- L350 and longer extensions also available.

90° angular head

- L150: 3,000, 6,000 min⁻¹ (C axis 5° indexing)
- L250: 3,000, 6,000 min⁻¹ (C axis 1°, 5° indexing)
- L350 and longer extensions also available.

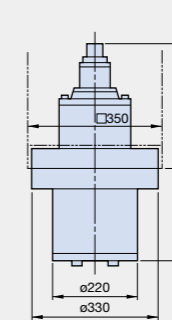
Vertical/horizontal swivel head:

- 3,000 min⁻¹

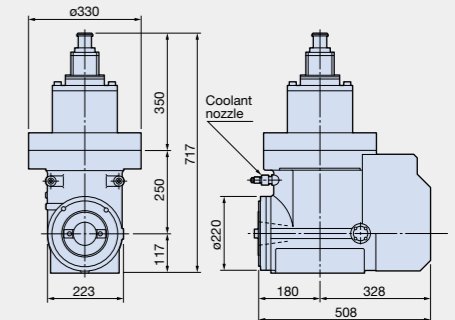
Universal index head (BC axis):

- 2,000, 6,000 min⁻¹
- B-/C-axis indexing variations: 1°/5°, 1°/1°, 5°/5°

Extension head (L250) (Optional)



90° angular head (L250) (Optional)



(Thru-spindle coolant, C-axis 5° indexing)

Unit: mm

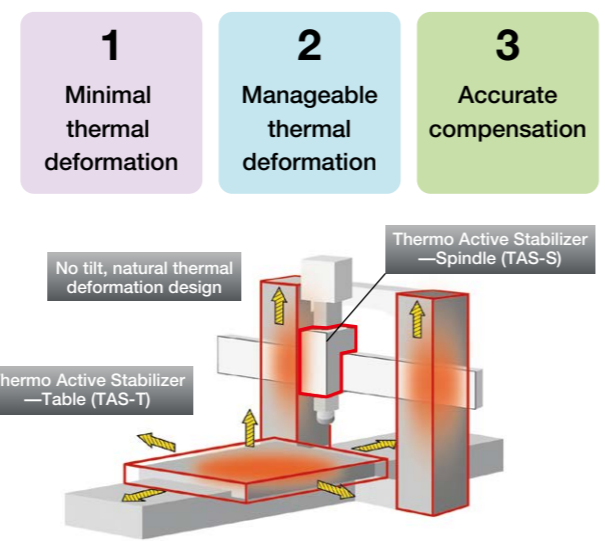
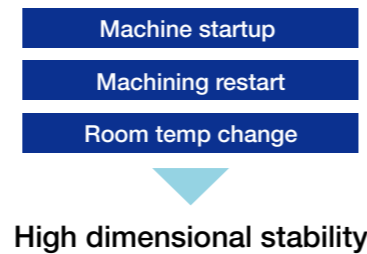
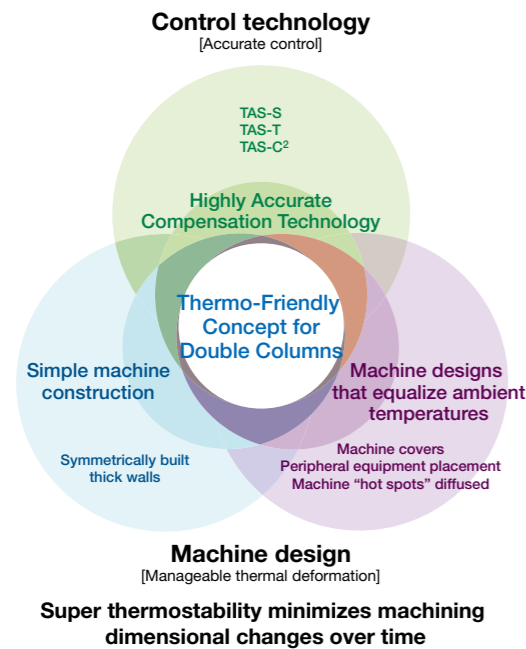
A variety of attachment heads with extensions 350 mm or longer are available. Please inquire for information on special heads

High accuracy is enabled in normal factory environments.



Eliminate waste with the Thermo-Friendly Concept

In addition to maintaining high dimensional accuracy when room temperature changes, Okuma's Thermo-Friendly Concept provides high dimensional accuracy during machine startup and machining restart. To stabilize thermal deformation, warming-up time is shortened and the burden of dimensional correction during machining restart is reduced.



Integrated machine design and control technology

The Thermo-Friendly Concept plays a principal role in our machine design. With simple machine designs and construction that equalize ambient temperatures, deformation is predictable, and complex torsion or tilting is controlled. Highly accurate compensation technology with the OSP controller developed by Okuma accurately controls thermal

deformation from room temperature changes, spindle thermal deformation from frequently changing spindle speeds, and inconsistent thermal deformation from coolant temperature. With the Thermo-Friendly Concept (Manageable Deformation—Accurately Controlled), Okuma products provide unrivaled dimensional stability.

	Thermo-Friendly Specifications	Thermo-Friendly Premium Specifications (Optional)*
Spindle thermal deformation control technology	Thermo Active Stabilizer—Spindle (TAS-S) Thermal deformation from spindle rotation controlled with high accuracy.	
Environmental thermal deformation control technology	Thermo Active Stabilizer—Table (TAS-T) Deformation from thermal expansion of table is accurately controlled.	Thermo Active Stabilizer—Construction for large machines (TAS-C²) TAS-C ² : Thermo Active Stabilizer — Table Thermo Active Stabilizer — Construction In addition to TAS-T at the left, the machine is optimally controlled to maintain machining accuracy even when ambient temperatures change.

*XYZ axis AbsoScale specs required.

Thermo Active Stabilizer—Spindle (TAS-S)

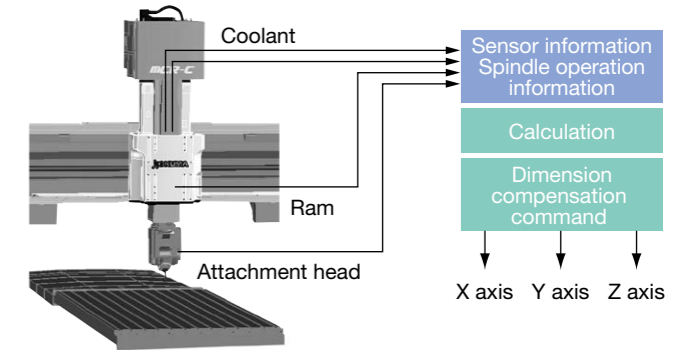
Thermal deformation of the spindle from high spindle speeds is accurately controlled (X, Y, Z axes). Accurate control is also performed in cases of frequent spindle speed changes, and thermal deformation of attachment heads are also controlled.

Thermo Active Stabilizer—Table (TAS-T)

In machining large workpieces, things like hole pitch deviation may become larger due to thermal expansion. Thermo Active Stabilizer—Table controls dimensional changes from thermal expansion of the table to obtain stable dimensional accuracies of even large components.

Thermo Active Stabilizer—Construction for large machines (TAS-C²)

In addition to Thermo Active Stabilizer—Table (TAS-T), the machine is optimally controlled to maintain machining accuracy even when ambient temperatures change.



Next-Generation Energy-Saving System **ECO suite**

A suite of energy saving applications for machine tools.

ECO Idling Stop

Auto cooler turnoff, with accuracy assured
Introducing the world's first application designed to stop machine tool idling — with no loss to accuracy. By using Okuma's Thermo-Friendly Concept, the OSP control monitors milling and turning spindle cooling status, and automatically turns off their coolers when cooling is complete. ECO Idling Stop also carefully stops peripheral equipment, so as power consumption and other hidden costs reduce, the benefits increase with longer machining preparation and other noncutting wait times. (A standard feature on machines with TAS-S)

ECO Power Monitor

On-the-spot check of energy savings
Power is shown individually for spindle, feed axes, and auxiliaries on the OSP operation screen. The energy-saving benefits from auxiliary equipment stopped with ECO Idling Stop can be confirmed on the spot.

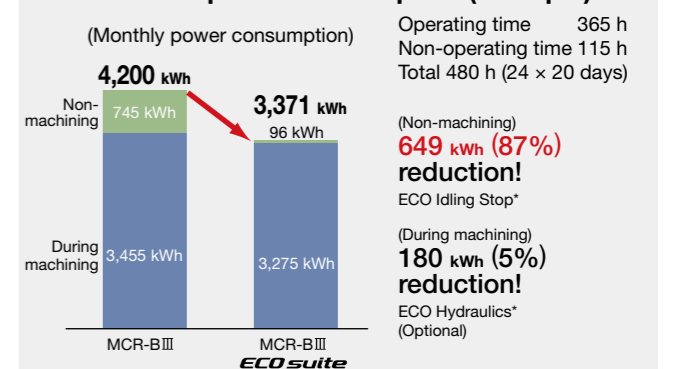
ECO Hydraulics (Optional)

Energy-saving hydraulic unit using servo control technology

ECO Operation (Optional)

Intermittent/linked operation of chip conveyor, or mist collector during machining

Reduction in power consumption (example)



*Calculated from actual power consumption data. Power consumption will differ depending on machine specifications and usage status.

Standard Specifications and Accessories

Spindle speed	30 to 4,000 min ⁻¹	ATC magazine safety fence	
Spindle cooler	Oil controller	Seesaw pendant operation panel	Vertical travel: 600 mm
Thermo-Friendly	TAS-S, TAS-T	Tapered bore cleaning bar	
Synchronized W axis NC (NC crossrail)	Absoscale detection (W axis)	Full-length gutters	Front discharge
Z-axis double ball screw		Work lamp	LED
Auto Tool changer	50 tools	Table shape	T slots (24H7)
Hydraulic unit		Crossrail screw cover	
ATC air blower and spindle air curtain	Air blower (blast)	Crossrail clamp	
Column guideway cover		Ladder and platform	
ATC tool magazine loader/unloader		Tool kit	
Door interlock		Tool box	

Kit Specifications

	5C	5CP ^{*3}	M	MP ^{*3}	BC2000	BC2000P ^{*3}	BC6000	BC6000P ^{*3}	Die/mold	Die/mold P ^{*3}	
Spindle speed	4,000 min ⁻¹				6,000 min ⁻¹						
Head index angle	5°			B-axis: 1°, C-axis: 1°				5°			
Auto attachment changer (AAC) ^{*1}	2-station		AAC storage stations not available					2-station			
Attachment heads	Extension head L150 4,000 min ⁻¹	●		—							
	Extension head L250 6,000 min ⁻¹			—						●	
	90° angular head L150 3,000 min ^{-1*2}	●		—						●	
	Vertical/horizontal swivel head 3,000 min ⁻¹	—		●		—					
	Universal index head (BC axis) 2,000 min ⁻¹	—				●		—			
Universal index head (BC axis) 6,000 min ⁻¹	—				●		—				
ATC auto cover					●						
AAC safety cover	●				—		●				
2.0 m X-axis travel extension (side-shuttle APC)	—	●	—	●	—	●	—	●	—	●	
Auto pallet changer preparations	—	●	—	●	—	●	—	●	—	●	
AbsoScale (X, Y, Z axes)					—		●				
Hyper-Surface Type A					—		●				

* 1. One or two stations can be added. Additional stations can be equipped with an extension head, 90° angular head, and BC-axis universal angular head. (Please inquire about special heads.)

* 2. L250-mm head length required when using thru-spindle coolant

* 3. P kits comes with auto pallet changer

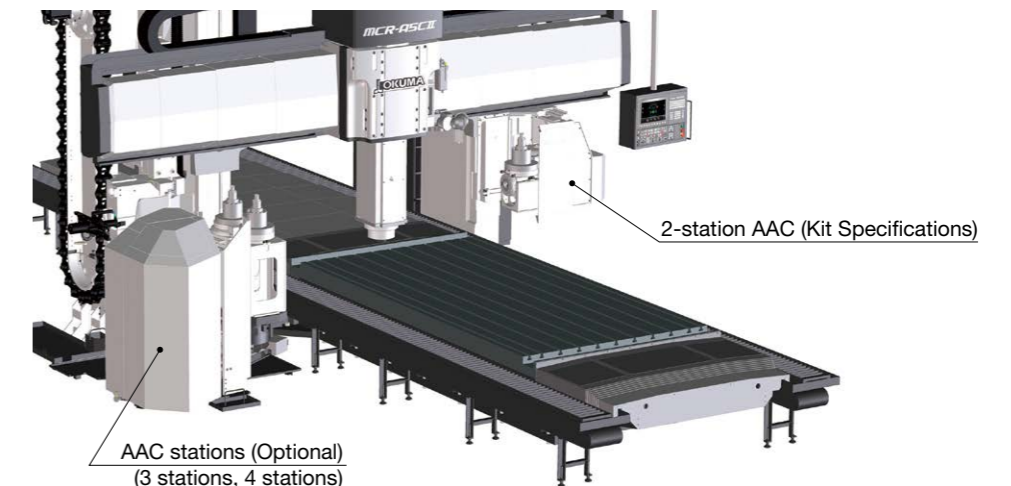
Optional Specifications and Accessories

Automatic pallet changer	2-pallet side shuttle (X-axis 2.0 m travel extension)	Auto attachment changer (AAC)	3 stations, 4 stations
		Attachment heads	Please consult
Average continuous cutting with limited upper feedrate	X, Y, Z: 6 m/min	Thermo-Friendly	Premium (includes TAS-S)
		Dust-proofing	
Coolant system		NC rotary tables	NC rotary table, inclined rotary table
Coolant tank	500 L, 1000 L, 1500 L	Mist collector	
Coolant heater/cooler		Dust collector	
Oil skimmer		Full-enclosure shielding	Column front/back covers, w/o ceiling
Filtration system			With ceiling (auto open/close)
Semi-dry machining		AbsoScale detection ^{*2}	X-Y-Z axes, X-Y axes
Thru-spindle coolant ^{*1}		Auto tool length compensation & breakage detection	Touch sensor, laser sensor
Coolant pump	0.75 kW, 1.1 kW	Auto gauging & auto zero offset	Touch probe
Oil mist coolant	Eyeball nozzle	In-machine conveyors	Full length, lift-up type Half length, lift-up type Full-length gutter + gutter chip flusher
Oil-hole coolant system	Simple system, High/low pressure switch (2 MPa)	Chip flushers	Crossrail shower (L/R column front), front/back gutters with telescopic covers, work wash gun
Chip air blower (blast)		Collection conveyors	Hinged, hinge + scraper (w/ drum filter) Hinged + magnetic separator
ATC tool magazine capacity	80, 100, 120, 180 tools	Chip buckets	L type, H type
ATC tools	Tool weight: 35 kg	Pendant arms	Parallel linked, manual, electric, floor mounted, Above the duct
Tool shank profile	CAT 50, DIN 50	Foundation methods	Foundation bolt (800 mm, 500 mm), chemical anchor, no foundation bolts (foundation blocks only)
Spindle speeds	30 to 6,000 min ⁻¹ , 30 to 10,000 min ⁻¹	Machine foundation pit work	50 to 1,400 mm (50 mm units)
Pull stud shape	MAS 1	Optional control cabinet positions	
Table T-slot width	20H7, 22H7, 28H7	Auto Attachment Head Compensation	
Table cross slot width	Please consult for width depth, pitch	Automatic extinguisher	
Optional table width	+300 mm	Door interlock	Type II for double-column machining centers (Memorandum required)
High column specs	200-mm increments (consult for 400 mm or higher)		
Optional W axis travel	Standard travel can accommodate up to +200 mm, +400 mm		
Work lamp	Spotlight		
Fire regulations compliance			
Ram oil pan slush collector			
Attachment head accelerator preps			
Angle head preps			

* 1. Dedicated Okuma pull studs required for thru-spindle coolant




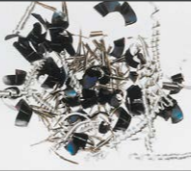
* 2. X-axis linear scale required for n x 65 and larger machines (X-axis travel larger than 6,700 mm)

Auto attachment changer (AAC)



Recommended specifications for chip discharge

○: Recommended △: Conditionally recommended

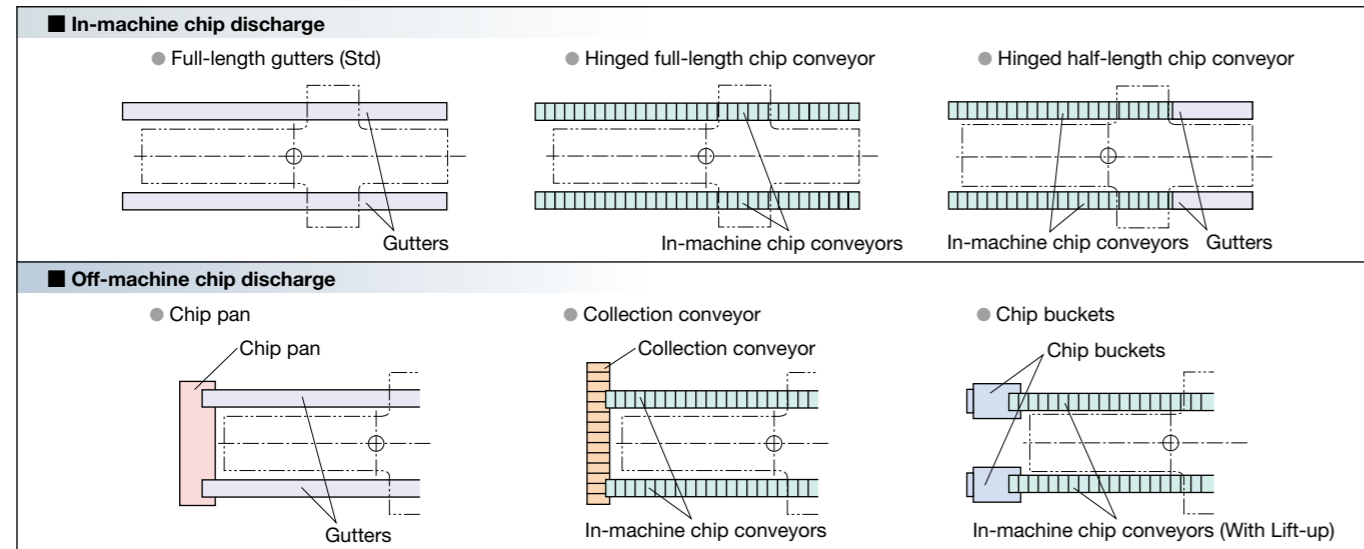
Material		Steel, SUS	Cast iron	Al, Ti, NFM	Mixed (general)*5	Special blank materials
Chip shape						Ceramic, carbon, glass, etc.
In-machine conveyor	Full-length gutters (Std)	○	○	○*4 (Chip flusher)	○	○
	Hinge type	○	○	○	○	—
Collection conveyor	Hinge type	○	○*3 (wet)	—	○	—
	2-step*1 (with drum filter)	△*2	△*2	○	△*2	—

*1. Hinged + scraper type *2. When there are many fine chips

Note: Do not use oil-based coolant which is a fire hazard.

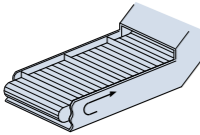
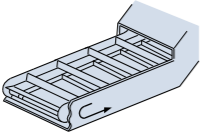
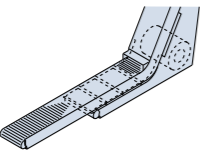
*3. Coolant tank with magnetic separator *4. Chip flusher is an optional specification *5. General-purpose applications: steel, stainless steel, cast iron

Example of chip conveyor placement



Note: Conveyor chip discharge direction (rear), off-machine conveyor discharge direction (operation side, magazine side), coolant tank position, etc. can be combined to match space. Please consult with your Okuma sales representative to confirm final arrangements.

Collection conveyor chip discharge (lift-up conveyors)

Type	Shape
Hinge	
Scraper	
Hinge + scraper (with drum filter)	

Lift-up conveyors + chip buckets (rear discharge)



Working ranges Machinable area (5C kit uses extension head, 90° angular head. Tool length = 300 mm)

Unit: mm

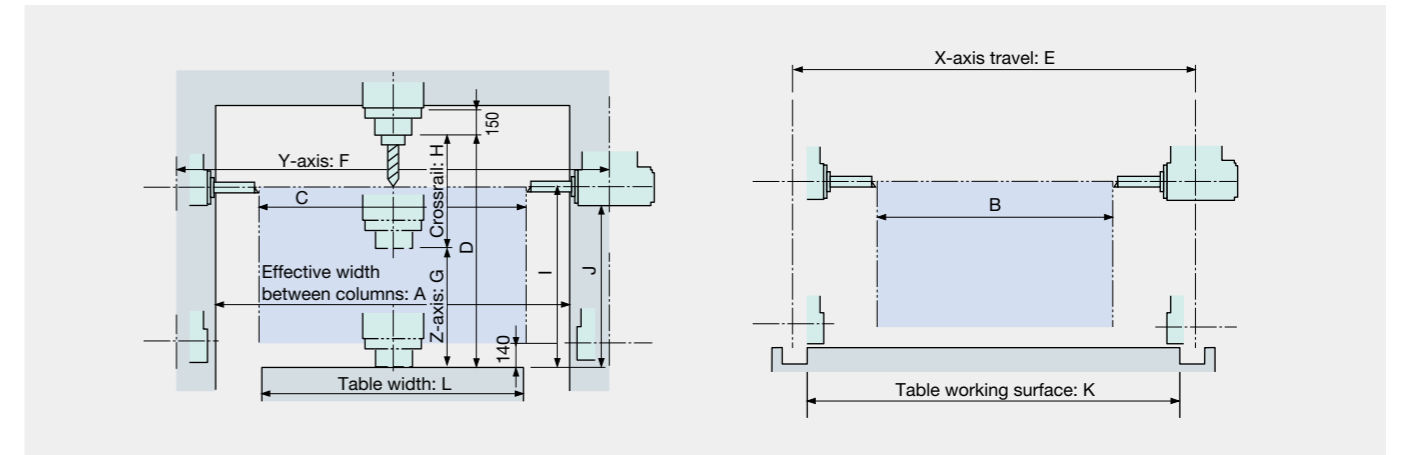
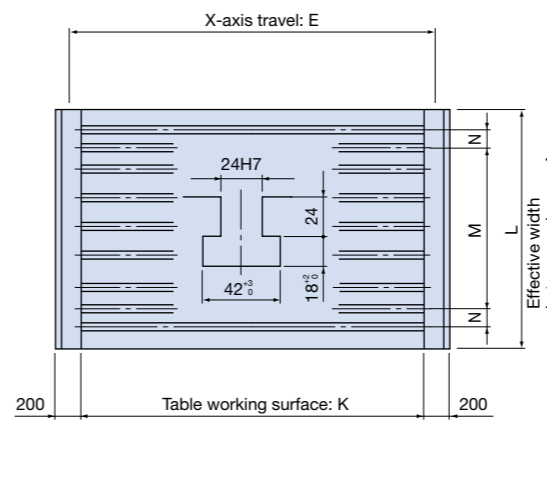


Table dimensions

Unit: mm



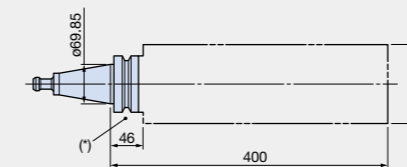
Size	A	B	C	D	E	F	G	H	I	J	K	L	M	N
20×30		2,240		0~	3,200						3,000			
20×40	2,150	3,240	1,640	1,450	4,200	2,600		800	1,150	1,338	4,000	1,500	8×140	100
20×50		4,240			5,200						5,000			
25×30		2,240			3,200						3,000			
25×40		3,240			4,200						4,000			
25×50	2,650	4,240	2,140	0~	5,200	3,100		1,000	1,350	1,538	5,000	2,000	8×200	130
25×65		5,740		1,650	6,700						6,500			
25×80		7,240			8,200						8,000			
30×50		4,240			5,200		800				5,000			
30×65		5,740		0~	6,700						6,500			
30×80	3,150	7,240	2,640	1,850	8,200	3,600			1,550	1,738	8,000	2,500	10×200	180
30×100		9,240			10,200			1,200			10,000			
35×50		4,240			5,200						5,000			
35×65		5,740			6,700						6,500			
35×80	3,650	7,240	3,140	0~	8,200	4,100			1,500	1,688	8,000	3,000	12×200	200
35×100		9,240		1,800	10,200						10,000			
35×120		11,240			12,200						12,000			

ATC tool dimensions

Unit: mm

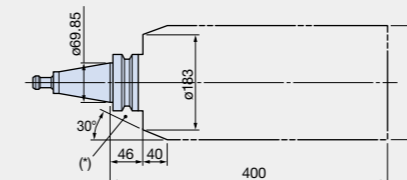
Maximum adjacent tool size

The maximum tool size is determined by the neighboring tool size



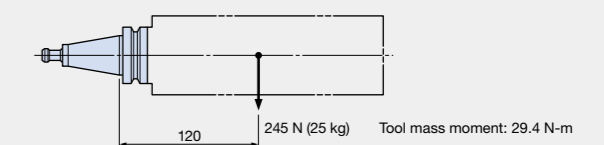
Maximum non-adjacent tool size

This is the maximum tool size when there are no tools on either side of a tool.



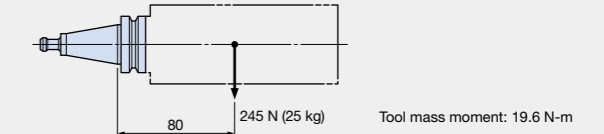
Maximum ATC tool mass moment

29.4 N-m (25 kg × 120 mm)



Maximum ATC tool mass moment with high speed movement

19.6 N-m (25 kg × 80 mm)



Note: Tools with tool weight moments over 29.4 N-m can not be used. ATC with high speed movement can be done with tools of ≤ 19.6 N-m

* Commercially available milling chucks may interfere with ATC arm and other tools. Prior to use, confirm size dimensions with tool manufacturer documentation.

Okuma's Intelligent Technologies enhance machine shop performance

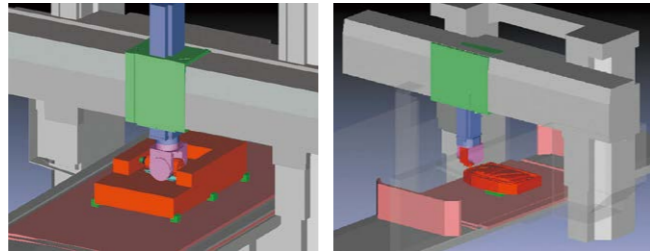


Set-up, first part cycle time greatly reduced
Collision prevention Collision Avoidance System (Optional)

■ Allowing operators to focus on making parts

NC controller (OSP) with 3D model data of machine components—workpiece, tool, fixture, spindle, attachment head— performs real time simulation just ahead of actual machine movements. In both automatic operation and manual movements, advance checks are made for interference or collisions and the machine movement is stopped.

Machinists (novice or pro) will benefit from reduced setup and trial cycle times, and the confidence to focus on making parts.

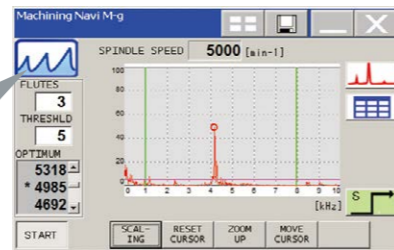


Longer tool life and shorter machining times by optimizing cutting conditions
Cutting condition search for milling/machining Machining Navi M-gII (Optional)

■ Maximizing machine tool performance

Navigates effective measures by detecting and analyzing machining chatter with a microphone attached to the machine. Effects are seen mainly on high rotation chatter with M-gII.

Machining Navi (OSP) provides the answer!



Better machining accuracy and surface quality, high-accuracy, stable machining maintained for long times with optimized servo control
Optimized Servo Control SERVO NAVI

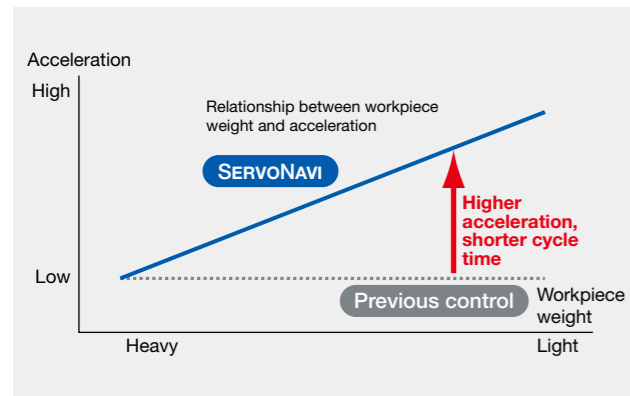
■ SERVO NAVI AI (Automatic Identification)

- Cycle time shortened with faster acceleration

Work Weight Auto Setting

On table travel type machining centers, the table feed acceleration with the previous system was the same regardless of weight, such as workpieces and fixtures loaded on the table.

Work Weight Auto Setting estimates the weight of the workpiece and fixture on the table and automatically sets servo parameters, including acceleration, to the optimum values. Cycle times are shortened with no changes to machining accuracy.



■ SERVO NAVI SF (Surface Fine-tuning)

- Maintains machining accuracy and surface quality

Reversal Spike Auto Adjustment

Slide resistance changes with length of time machine tools are utilized, and discrepancies occur with the servo parameters that were the best when the machine was first installed. This may produce crease marks at motion reversals and affect machining accuracy (part surface quality).

Reversal Spike Auto Adjustment maintains machining accuracy by switching servo parameters to the optimum values matched to changes in slide resistance.

- Contributes to longer machine life

Vibration Auto Adjustment

When aging changes machine performance, noise, vibration, crease marks, or fish scales may appear. VAA can quickly eliminate noise and vibration even from machines with years of operation.

- Maintaining high quality machined surfaces on dies/molds

Deflection Auto Adjustment

With fast acceleration/deceleration in the machining of dies and molds, etc, positioning error due to bending (ball screw expansion/contraction) can affect the machined surface quality. Deflection Auto Adjustment maintains the surface quality of die/mold machined surfaces by automatically adjusting the servo parameters to match the amount of bending, even when positioning error (amount of bending) has changed as a result of changes over time.

Okuma's merging "Machine & Control" technologies deliver faster, more accurate machining

Providing real-world features that machine shops really need

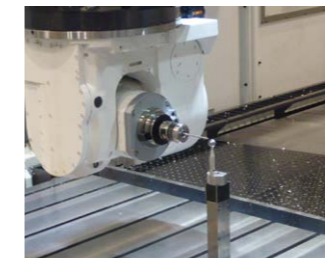
■ Auto Attachment Head Compensation (Optional)

■ Rotation compensation that used to take half day to a full day now done automatically in twenty minutes*

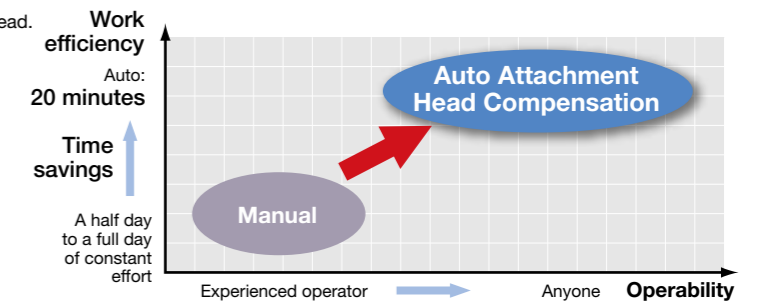
Auto Attachment Head Compensation is a function that is automatically sets attachment head rotation compensation values. It is quick, easy and can be used by anyone. By setting the compensation values, the program commands can be made for tool tip position even with different attachment head type and rotation tilt. Creation of NC programs and machine operation

becomes much easier. Auto Attachment Head Compensation performs this rotation compensation work automatically, enabling automatic setting in 20 minutes* for a task that used to take an experienced operator a half to full day with three attachment heads. High machining accuracy can also be maintained with regular measurements.

Note: The time needed for automatic settings differs with the attachment head.



The datum sphere is fixed to the table and measurement preparations are completed by simply positioning the attachment head with attached touch probe near the top of the datum sphere.



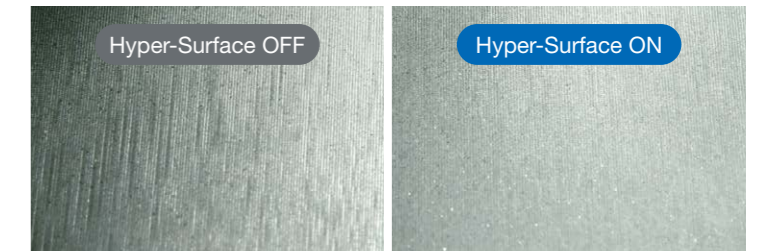
Note: AAHC requires Okuma's auto gauging and auto zero offset functions (with touch probe).

■ Machining data automatically compensated

■ Hyper-Surface (Optional)

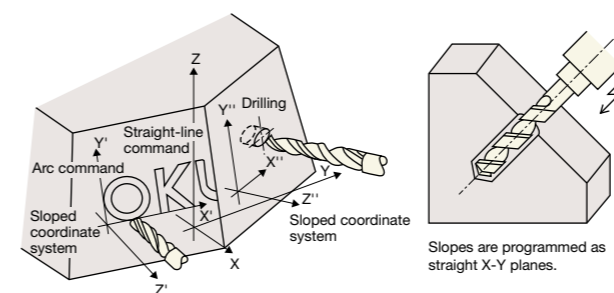
In addition to sculptured-surface adaptive acceleration control with previous Super-NURBS, this serves to compensate disordered machining data output from CAM on the NC, maintain shape accuracy, and improve surface quality.

- Automatically compensates for deviation between adjacent tool paths



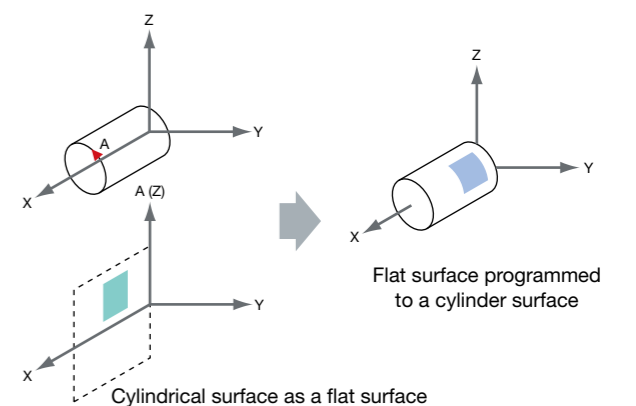
■ Slope machining (Optional)

The slope surface coordinate system lets you use coordinate change to rotate coordinates to match the cutting plane. Just program sloped surfaces as X-Y planes to machine any surface. The pulse handle feed in the sloped coordinate system can be used to adjust the tool play.



■ Cylindrical side machining (Optional)

Cylindrical surface machining can be done by changing the rotary axis into a linear axis imagined as a flat surface.



With revamped operation and responsiveness— ease of use for machine shops first!

Smart factories implement advanced digitization and networking (IoT) in manufacturing to achieve enhanced productivity and added value. The OSP has evolved tremendously as a CNC suited to advanced intelligent technology. Okuma's new control uses the latest CPUs for a tremendous boost in operability, rendering performance, and processing speed. The OSP suite also features a full range of useful apps that could only come from a machine-tool manufacturer, making smart manufacturing a reality.

Smooth, comfortable operation with the feeling of using a smart phone

Improved rendering performance and use of a multi-touch panel achieve intuitive graphical operation. Moving, enlarging, reducing, and rotating 3D models, as well as list views of tool data, programs, and other information can be accomplished through smooth, speedy operations with the same feel as using a smart phone. The screen display layout on the operation screen can also be changed to suit operator preferences and customized for the novice and/or veteran machinists.



Note: Collision Avoidance System (Optional) shown above.

“Just what we wanted.”— Refreshed OSP suite apps

This became possible through the addition of Okuma's machining expertise based on requests we heard from real, machine-shop customers. The brain power packed into the CNC, built by a machine tool manufacturer, will “empower shop floor” management.

Routine inspection support
Maintenance Monitor

The Maintenance Monitor displays items for inspections before starting daily operation and regular inspections and the rough estimate of inspection timing. Touching the [INFO] button displays the PDF instruction manual file of relevant maintenance items.

[INFO] button

Increased productivity through visualization of motor power reserve
Spindle Output Monitor

Monitoring operating status even when away from the machine
E-mail Notification

Comment display for greater ease of use and faster work
Common Variable Monitor

Automatic saving of recorded alarms
Screen Capture

Easy programming without keying in code
Scheduled Program Editor

Standard Specifications

Basic Specs	Control	X, Y, Z, W simultaneous 4-axis, spindle control (1 axis)
	Position feedback	OSP full range absolute position feedback (zero point return not required)
	Coordinate functions	Machine coordinate system (1 set), work coordinate system (20 sets)
	Min / Max inputs	8-digit decimal, ±99999.999 to 0.001 mm (±3937.0078 to 0.0001 in.), 0.001° Decimal: 1 μm, 10 μm, 1 mm (0.0001, 1 in.) (1°, 0.01°, 0.001°)
	Feed	Override: 0 to 200%, rapid traverse override: 0% to 100%
	Spindle control	Direct spindle speed commands, override 30 to 300%, multi-point indexing
	Tool compensation	No. of registered tools: Max 999 sets, tool length/radius compensation: 3 sets per tool
	Display	15-inch color LCD + multi-touch panel operations
	Self-diagnostics	Automatic diagnostics and display of program, operation, machine, and NC system problems
	Programming	Program capacity
Program operations		Program management, editing, multitasking, scheduled program, fixed cycle, G-/M-code macros, arithmetic, logic statements, math functions, variables, branch commands, coordinate calculate, area calculate, coordinate convert, programming help
Operations	“suite apps”	Applications to visualize and digitize information needed on the shop floor
	“suite operation”	Highly reliable touch panel suited to shop floors. One-touch access to suite apps.
	Easy Operation	“Single-mode operation” to complete a series of operations Advanced operation panel/graphics facilitate smooth machine control
	Machine operations	MDI, manual (rapid traverse, manual cutting feed, pulse handle), load meter, operation help, alarm help, sequence return, manual interrupt/auto return, pulse handle overlap, parameter I/O, PLC monitor
	MacMan	Machining management: machining results, machine utilization, fault data compile & report, external output
Communications / Networking	USB (2 ports), Ethernet	
High speed/accuracy specs	Thermo-Friendly (TAS-S: Thermo Active Stabilizer—Spindle, TAS-T: Thermo Active Stabilizer—Table), Hi-Cut Pro, pitch error compensation, Hi-G Control, SERVONAVI	
Energy-saving	ECO suite	ECO Idling Stop *1, ECO Power Monitor *2

*1. Spindle cooler Idling Stop is used on TAS-S machines.
 *2. The power display shows estimated values. When precise power values are needed, select the on-machine wattmeter option.

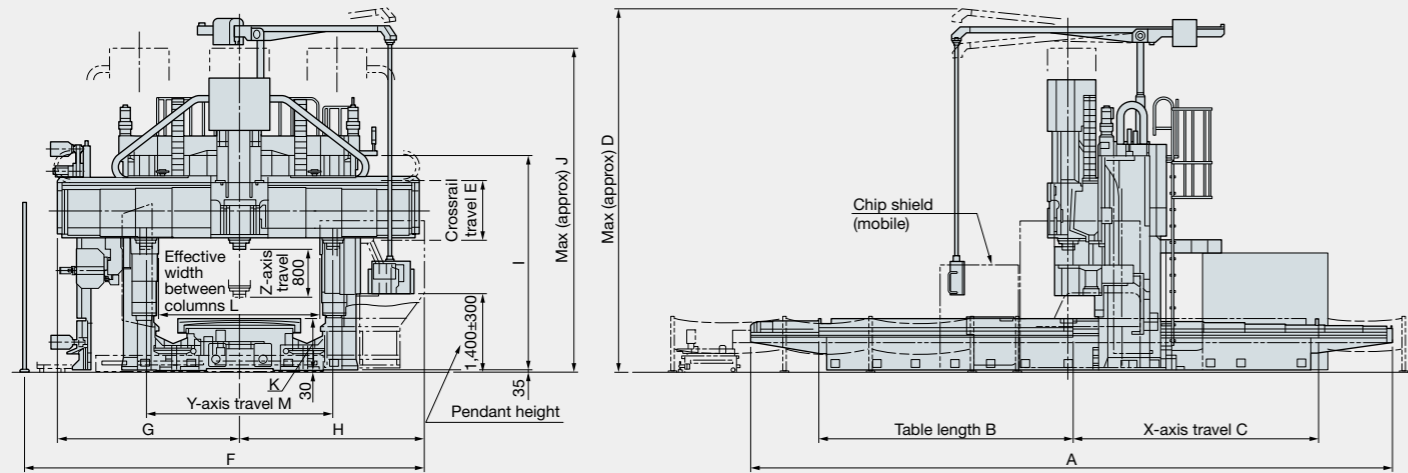
Optional Specifications

Item	Kit Specs	NML			3D			AOT		
		E	D		E	D		E	D	
Interactive functions										
Advanced One-Touch IGF-M (Real 3D simulation included)										
Interactive MAP (I-MAP)										
Programming										
Auto scheduled program update (Scheduled program is Std)										
Additional G/M code macros										
Common variables (Std: 200 pcs)	1,000 pcs									
	2,000 pcs									
Program branch; 2 sets										
Program notes (MSG)										
Coordinate system selection (Std: 20 sets)	100 sets									
	200 sets									
	400 sets									
Helical cutting (within 360 degrees)										
3D circular interpolation										
Synchronized Tapping II										
Arbitrary angle chamfering										
Cylindrical side machining										
Slope machining										
Tool max rotational speed setting										
F1-digit feed	4 sets, 8 sets, parameter									
Programmable travel limits (G22, G23)										
Skip (G31)										
Axis naming (G14)										
3D tool compensation										
Tool wear compensation										
Drawing conversion	Programmable mirror image (G62)									
	Enlarge/reduce (G50, G51)									
User task 2	I/O variables (16 each)									
Tape conversion*										
Monitoring										
Real 3D simulation										
Simple load monitor	Spindle overload monitor									
NC operation monitor	Hour meter, work counter									
Hour meters	Power ON, spindle run, NC ON, machining									
Operation end buzzer	With M02, M30, and END commands									
Work counter	With M02 and M30									
MOP-TOOL	Adaptive control, overload monitor									
Tool life management	Hour meter, No. of workpieces									
ECO suite (Energy-saving function)										
ECO Operation										
ECO Power Monitor	Wattmeter									
Energy-saving hydraulic unit	Inverter ECO Hydraulics									

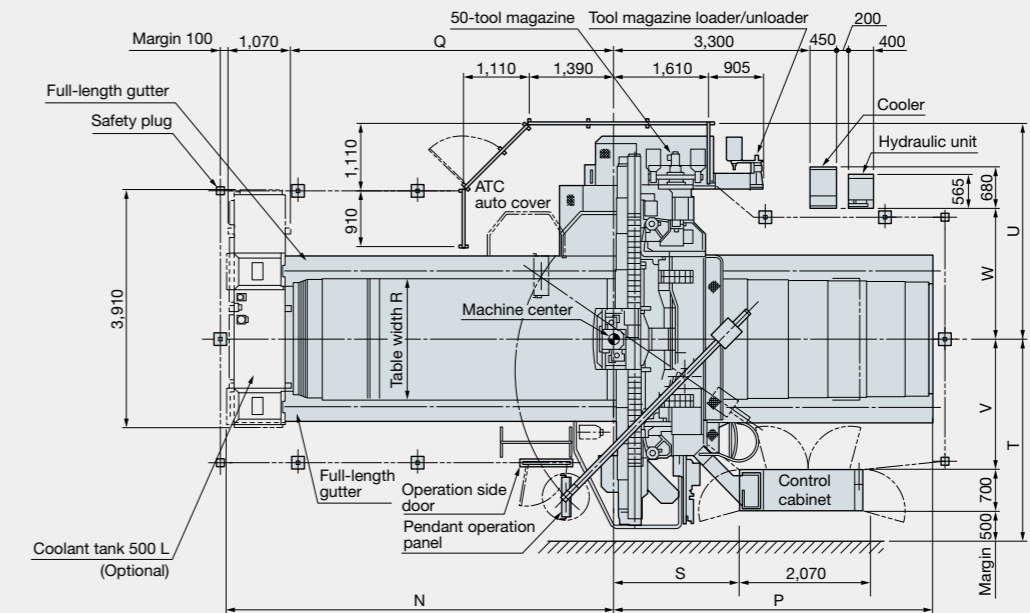
Kit full forms: NML: Normal, 3D: Real 3D simulation, E: Economy, D: Deluxe
 AOT: Advanced One-Touch IGF-M

* Requires technical consultation

Dimensional Drawing



Installation Drawing



Unit : mm

	Size	A	B	C	D	E	F	G	H	I	J	K	L	M
MCR-A5CII 20	20×30	8,430	3,400	3,200										
	20×40	10,730	4,400	4,200	5,820	800	6,180	2,850	2,880	3,345	5,170	850	2,150	2,600
	20×50	12,830	5,400	5,200										
MCR-A5CII 25	25×30	8,430	3,400	3,200										
	25×40	10,730	4,400	4,200										
	25×50	12,830	5,400	5,200	6,020	1,000	6,680	3,100	3,130	3,545	5,370	850	2,650	3,100
	25×65	16,430	6,900	6,700										
	25×80	19,430	8,400	8,200										
MCR-A5CII 30	30×50	12,830	5,400	5,200										
	30×65	16,430	6,900	6,700										
	30×80	19,430	8,400	8,200	6,300	1,200	7,280	3,400	3,430	3,825	5,620	900	3,150	3,600
	30×100	23,930	10,400	10,200										
MCR-A5CII 35	35×50	12,830	5,400	5,200										
	35×65	16,430	6,900	6,700										
	35×80	19,430	8,400	8,200	6,300	1,200	7,780	3,650	3,680	3,825	5,620	950	3,650	4,100
	35×100	23,930	10,400	10,200										
	35×120	27,930	12,400	12,200										

Dimensions, etc. may change depending on specifications. Please refer to delivered machine specifications for final specifications.
Height increases 40 mm with the use of chemical anchors.

Unit : mm

	Size	N	P	Q	R	S	T	U	V	W
MCR-A5CII 20	20×30	5,180	4,250	4,090						
	20×40	6,330	5,400	5,240	1,500	2,100	3,100	3,300	1,900	1,900
	20×50	7,380	6,450	6,290						
MCR-A5CII 25	25×30	5,180	4,250	4,090						
	25×40	6,330	5,400	5,240						
	25×50	7,380	6,450	6,290	2,000	2,100	3,350	3,550	2,150	2,150
	25×65	9,180	8,250	8,090						
	25×80	10,750	10,170	9,660						
MCR-A5CII 30	30×50	7,380	6,450	6,290						
	30×65	9,180	8,250	8,090						
	30×80	10,660	9,750	9,590	2,500	2,300	3,650	3,850	2,450	2,400
	30×100	12,910	12,000	11,840						
MCR-A5CII 35	35×50	7,380	6,450	6,290						
	35×65	9,180	8,250	8,090						
	35×80	10,660	9,750	9,590	3,000	2,300	3,900	4,100	2,700	2,650
	35×100	12,910	12,000	11,840						
	35×120	14,910	14,000	13,840						

Dimensions may change depending on coolant tank and other specifications.
Please refer to delivered machine specifications for final specifications.

Machine Specifications

		MCR-A5CII 20			MCR-A5CII 25					MCR-A5CII 30				MCR-A5CII 35						
Nominal sizes		20 × 30	20 × 40	20 × 50	25 × 30	25 × 40	25 × 50	25 × 65	25 × 80	30 × 50	30 × 65	30 × 80	30 × 100	35 × 50	35 × 65	35 × 80	35 × 100	35 × 120		
●Travel																				
X-axis (table front / back)	mm (in.)	3,200 (125.98)	4,200 (165.35)	5,200 (204.72)	3,200 (125.98)	4,200 (165.35)	5,200 (204.72)	6,700 (263.78)	8,200 (322.83)	5,200 (204.72)	6,700 (263.78)	8,200 (322.83)	10,200 (401.57)	5,200 (204.72)	6,700 (263.78)	8,200 (322.83)	10,200 (401.57)	12,200 (480.31)		
Y-axis (spindlehead horizontal)	mm (in.)	2,600 (102.36)			3,100 (122.05)					3,600 (141.73)				4,100 (161.42)						
Z-axis (ram vertical)	mm (in.)	800 (31.50)																		
W-axis (crossrail vertical)	mm (in.)	800 (31.50)			1,000 (39.37)					1,200 (47.24)										
Effective width between columns	mm (in.)	2,150 (84.65)			2,650 (104.33)					3,150 (124.02)				3,650 (143.70)						
Table to spindle nose	mm (in.)	0 to 1,450 [0 to 1,350] *1 (0 to 57.08) [0 to 53.14]			0 to 1,650 [0 to 1,550] *1 (0 to 64.96) [0 to 61.02]					0 to 1,850 [0 to 1,750] *1 (0 to 72.83) [0 to 68.90]				0 to 1,800 [0 to 1,700] *1 (0 to 70.87) [0 to 66.93]						
●Table																				
Working surface	mm	1,500 × 3,000	1,500 × 4,000	1,500 × 5,000	2,000 × 3,000	2,000 × 4,000	2,000 × 5,000	2,000 × 6,500	2,000 × 8,000	2,500 × 5,000	2,500 × 6,500	2,500 × 8,000	2,500 × 10,000	3,000 × 5,000	3,000 × 6,500	3,000 × 8,000	3,000 × 10,000	3,000 × 12,000		
Maximum load	kg (lb)	12,000 (26,400)	16,000 (35,200)	20,000 (44,000)	18,000 (39,600)	22,000 (48,400)	27,000 (59,400)	34,000 (74,800)	42,000 (92,400)	33,000 (72,600)	43,000 (94,600)	52,000 (114,400)	66,000 (145,200)	29,500 (64,900)	37,000 (81,400)	47,000 (103,400)	61,000 (134,200)	65,000 (143,000)		
T-slots Width × No. <center pitch>	mm	24H7 × 11 <center: 140, both ends: 100>			24H7 × 11 <center: 200, both ends: 130>					24H7 × 13 <center: 200, both ends: 180>				24H7 × 15 <center: 200, both ends: 200>						
Height from machine bottom	mm (in.)	850 (33.46)								900 (35.43)				950 (37.40)						
●Spindle																				
Speed range	min ⁻¹	30 to 4,000 [30 to 6,000, 30 to 10,000] *2																		
Taper bore		7/24 taper No.50																		
Bearing diameter	mm (in.)	ø100 (3.94) [ø85 (3.35)]*2																		
●Feed rates																				
Rapid traverse	m/min	X: 30, Y: 32, Z: 20 *3								X: 30, Y: 32 *4, Z: 20 *3				X: 20, Y: 32 *4, Z: 20		X: 30, Y: 30 *4, Z: 20 *3			X: 20, Y: 30 *4, Z: 20	
Feed rate	mm/min	1 to 10,000																		
Crossrail traverse	m/min	3																		
●Automatic Tool Changer																				
Tool shank		MAS BT50																		
Pull stud		MAS P50T-2																		
Tool magazine capacity	tools	50 [80, 100, 120, 180]																		
Max tool diameter	mm (in.)	w/ adjacent tools: ø135 (5.31); w/o adjacent tools: ø230 (9.06)																		
Max tool length	mm (in.)	400 (15.75)																		
Max tool weight	kg (lb)	25 (55)																		
Tool selection		Fixed adress																		
●Motors																				
Spindle drive	kW (hp)	26/22 (30 min/cont) [30/22 (30 min/cont)] *5																		
Axis feed drives	kW (hp)	X: 9.4 (12.5), Y: 7.3 (9.7), Z: 5.2 × 2 (6.9 × 2)								X: 14.0 (18.7), Y: 7.3 (9.7), Z: 5.2 × 2 (6.9 × 2)										
Crossrail traverse drive	kW (hp)	W: 4.6 × 2 (6.1 × 2)																		
●Power Sources																				
Electrical power supply	kVA	60 *6																		
Compressed air supply	L/min	650 (0.5 MPa or more) *6																		
●Machine Size																				
Height	mm (in.)	5,820 (229.13)*7			6,020 (237.00)*7					6,300 (248.03)*7										
Floor space (machine only)	mm	6,180 × 8,430	6,180 × 10,730	6,180 × 12,830	6,680 × 8,430	6,680 × 10,730	6,680 × 12,830	6,680 × 16,430	6,680 × 19,430	7,280 × 12,830	7,280 × 16,430	7,280 × 19,430	7,280 × 23,930	7,780 × 12,830	7,780 × 16,430	7,780 × 19,430	7,780 × 23,930	7,780 × 27,930		
Weight (machine only)	kg (lb)	32,000 (70,400)	36,000 (79,200)	40,000 (88,000)	33,000 (72,600)	39,000 (85,800)	44,000 (96,800)	52,000 (114,400)	58,000 (127,600)	50,000 (110,000)	59,000 (129,800)	67,000 (147,400)	78,000 (171,600)	56,000 (123,200)	65,000 (143,000)	79,000 (173,800)	87,000 (191,400)	101,000 (222,200)		
●CNC																				
OSP-P300MA																				

[]: Optional

*1. []: Numbers in the case of extension head length 250 mm.

*2. []: Shows 6,000 min⁻¹, 10,000 min⁻¹ spec

*3. 20 m/min on each axis with die/mold kit.

*4. Deceleration near both ends of Y-axis travel

*5. Square brackets show high-speed 10,000 min⁻¹ aluminum machining specifications

*6. Standard specs

*7. Height increases 40 mm with use of chemical anchors.

When using Okuma products, always read the safety precautions mentioned in the instruction manual and attached to the product.

● The specifications, illustrations, and descriptions in this brochure vary in different markets and are subject to change without notice.
Pub.No.MCR-ASC II-E-(8a)-300 (Jul 2018)



OKUMA Corporation

Oguchi-cho, Niwa-gun,
Aichi 480-0193, Japan
TEL: +81-587-95-7825 FAX: +81-587-95-6074